

E-Chem Sensor Data Model H10-11 Chlorine (Cl₂) Smart Sensor

Model H10-11 Chlorine sensor is an electrochemical device used for the detection of Cl₂ gas leaks in ambient air. It is designed to be used in conjunction with ATI's Model C16 portable leak detector or Models D12 or F12 toxic gas transmitters. H10-11 sensors contain internal electronics and memory that control sensor bias and store calibration data, calibration history, and limited data log.

Chlorine sensors operate by generating a small electrical current proportional to the partial pressure of chlorine gas in the surrounding air. The current is the result of the reduction of chlorine on the surface of a catalytic electrode, with a resulting signal that is linear with respect to chlorine concentration. Cl₂ sensors are 2-electrode sensors and do not require oxygen to function.



The table below provides the operational and performance specifications for the H10-11 Cl₂ sensor. Contact ATI or your ATI local representative with questions regarding specific applications for this sensor.

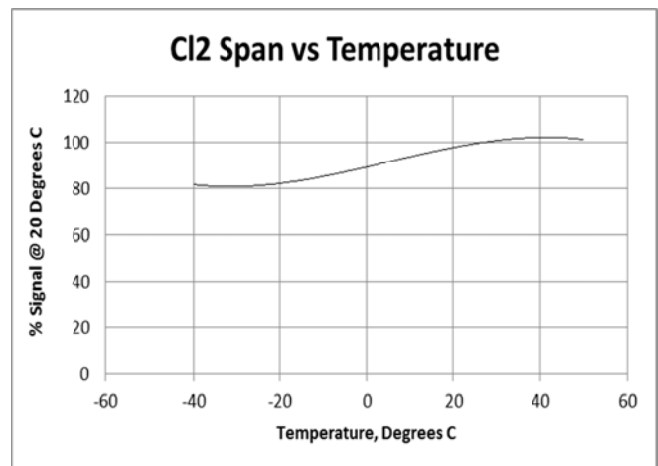
Primary Response	Volume % Cl ₂
Measuring Range	0.2 – 200 PPM V/V (0.02 – 9.8 mg/m ³)
Sensor Current	0.25 µA/PPM Nominal
Sensor Current Variability	0.1 – 0.5 µA/PPM
Linearity	± 1%
Response Time	T ₅₀ = 10 Seconds, T ₉₀ = 90 seconds
Temperature Range	-30° to +50° C
Memory	Internal e ² memory for Calibration Data and Calibration History
Pressure Range:	- 5 to + 50 PSIG
Pressure Variability	Output proportional to Cl ₂ partial pressure
Operating Humidity	0-99% RH Non-condensing (Intermittent) 20-95% RH Non-condensing (Continuous)
Zero Stability	± 0.1 PPM at constant temperature ± 0.2 PPM over ±10° C ambient temperature change
Span Drift	< 2%/Month
Temperature Effect on Span	See Graph
Operating Life	> 24 Months Typical in Clean Conditions
Storage Recommendation	Recommended maximum of 1 year for best sensor performance. Store at less than 25° C in a sealed container.
Size	1" D x 1.25" H (25 mm x 32 mm)
Weight	17 grams

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H10-11 Chlorine sensors exhibit response to certain other gases. When applying this sensor to specific applications, it is good practice to verify whether or not any of these potential interferences are present and might present interference issues. Note that cross-sensitivity data is approximate and based on exposures under 100 PPM. In some cases, response to other gases may not be stable or may be transient.

Electrochemical sensors exhibit a response that is temperature dependent to a limited extent. Although the effect of temperature is not large, it is useful to be aware of the effect. Shown below is a graph showing the effect on span of changing temperature.

Gas	Symbol	Response to 1 PPM
Bromine	Br ₂	1.0
Fluorine	F ₂	1.0
Chlorine Dioxide	ClO ₂	0.7
Hydrogen Sulfide	H ₂ S	-0.1
Methyl Mercaptan	CH ₃ SH	-0.04
Ozone	O ₃	0.05
Hydrogen Cyanide	HCN	-0.08
Ethanol (alcohol)	C ₂ H ₆ O	None
Ammonia	NH ₃	None
Hydrogen Chloride	HCl	None
Carbon Dioxide	CO ₂	None
Nitric Oxide	NO	None
Hydrogen Fluoride	HF	None



Shown below is a typical response time graph for an Cl₂ sensor. Note that this response time can become significantly slower at temperatures below -20°C.

